

A Phase I Archaeological Survey
of 1996 Rehab Areas 12-17, in Training Areas 3 and 6,
Fort Knox, Hardin County, Kentucky

Prepared by:

Pamela A. Schenian, Staff Archaeologist
and
Stephen T. Mocas, Assistant Staff Archaeologist

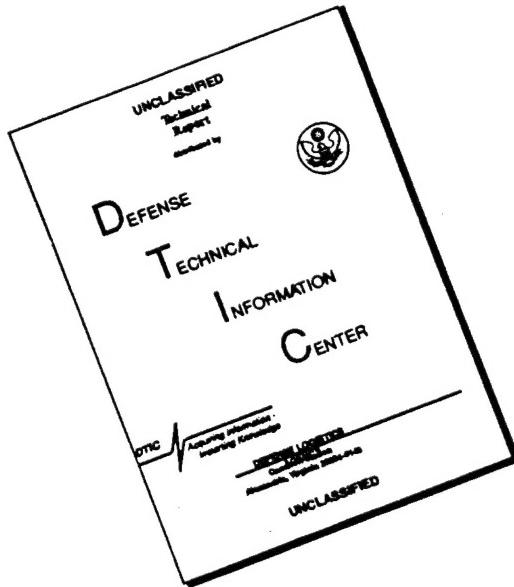
August 1996

Pamela A. Schenian
Pamela A. Schenian
Project Principal Investigator

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Directorate of Public Works, Fort Knox, Kentucky 40121-5000
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16. Abstract (Limit 200 words) In May-July 1996, Fort Knox contract archaeologists conducted a Phase I survey of 37.34 ha (92.26 acres) in Training Areas 3 and 6, Fort Knox, Hardin County, Kentucky, in advance of soil rehabilitation. The survey recorded 15Hd528-15Hd535 and five isolated finds. Sites 15Hd528, 15Hd530, 15Hd532, 15Hd533, and isolated finds TA3-IF1 and TA6-IF2 through TA6-IF4 have indeterminate prehistoric components. Sites 15Hd529 and 15Hd531 have Late Archaic-Early Woodland components, and 15Hd534 has Late Archaic and Late Woodland-Mississippian components. TA6-IF1 is an unidentified Middle-Late Archaic projectile point. Site 15Hd535 is a late nineteenth-early twentieth century historic site. Sites 15Hd528-15Hd530 and 15Hd532-15Hd535 and the isolated finds are not eligible for the National Register, and no further archaeological investigation is recommended for them. Site 15Hd531 is potentially eligible for the National Register due to the presence of intact topsoil over much of the site and conditions not conducive to a complete evaluation of the site. The tank trail passing through 15Hd531 is eroded well into subsoil, so grading it will not affect intact areas of the site. It is recommended that archaeologists monitor tree planting in the 15Hd531 vicinity, examining soil profiles and screening the soil prior to backfilling of the tree root holes.				
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ABSTRACT

In May through July 1996, the Fort Knox contract archaeologists conducted a Phase I survey of 37.34 ha (92.26 acres) in Training Areas 3 and 6, Fort Knox, Hardin County, Kentucky, in advance of soil rehabilitation. The survey recorded 15Hd528-15Hd535 and five prehistoric isolated finds.

Sites 15Hd528, 15Hd530, 15Hd532, 15Hd533, and isolated finds TA3-IF1, and TA6-IF2 through TA6-IF4 have indeterminate prehistoric components. Sites 15Hd529 and 15Hd531 have Late Archaic-Early Woodland components, and 15Hd534 has Late Archaic and Late Woodland-Mississippian components. TA6-IF1 is an unidentified Middle-Late Archaic projectile point. Site 15Hd535 is a late nineteenth-early twentieth century historic site.

Sites 15Hd528-15Hd530 and 15Hd532-15Hd535 and the isolated finds are not eligible for the National Register due to previous disturbance. No further archaeological investigation is recommended for them. Site 15Hd531 is potentially eligible for the National Register due to the presence of intact topsoil over much of the site and conditions not conducive to a complete evaluation of the site. The tank trail passing through 15Hd531 is eroded well into subsoil, so grading of the trail will not affect intact areas of the site. It is recommended that archaeologists monitor the tree planting in the 15Hd531 vicinity, examining soil profiles and screening the soil prior to backfilling of the tree root holes.

MANAGEMENT SUMMARY

In accordance with the National Historic Preservation Act and other federal laws and regulations, a Phase I archaeological survey was conducted of scheduled 1996 Rehabilitation Areas 12-17, totalling 33.7 ha (83.3 acres), in Training Areas 3 and 6, Fort Knox, Hardin County, Kentucky, in May through July 1996. The survey recorded 15Hd528-15Hd535 and five isolated finds of prehistoric materials.

Sites 15Hd528, 15Hd530, 15Hd532, 15Hd533, and isolated finds TA3-IF1, TA6-IF2, TA6-IF3, and TA6-IF4 have indeterminate prehistoric components. Sites 15Hd529 and 15Hd531 have Late Archaic-Early Woodland components, 15Hd534 has Late Archaic and Late Woodland-Mississippian components, 15Hd535 is a historic site, and TA6-IF1 is a Middle-Late Archaic projectile point.

Sites 15Hd528-15Hd530 and 15Hd532-15Hd535 and the five isolated finds are not eligible for the National Register. No additional archaeological work is recommended for them. Site 15Hd531 is potentially eligible for the National Register. The tank trail which passes through 15Hd531 is eroded well into subsoil, so grading of the trail will not affect intact portions of the site. It is recommended that the Fort Knox contract archaeologists should monitor the tree planting in the 15Hd531 vicinity. Additional archaeological research may be required at 15Hd531 if future undertakings might affect the site.

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INTRODUCTION

Seventeen rehabilitation (rehab) areas, some containing more than one tract, were defined as project areas for 1996 by the Integrated Training Area Management (ITAM) coordinator, Gail Pollock. In previous years the archaeological survey of the rehab areas scheduled for that season or year have been summarized in a single report (Schenian 1994; Schenian and Mocas 1993, 1994a). Because an unusually rainy spring delayed the completion of fieldwork this year, the Fort Knox contract archaeology staff opted to split the rehab survey into several reports to allow the description and recommendations for some rehab areas to be reviewed by the State Historic Preservation Officer (SHPO) while artifact analysis and report writing continue for other areas. This report summarizes the survey of Rehab Areas 12 through 17. Rehab Areas 6 through 8 were discussed in Schenian and Mocas (1996a), and Rehab Areas 1 through 5, 10 and 11 will be discussed in a report in preparation.

In May-July 1996, the Fort Knox contract archaeology staff conducted a Phase I archaeological survey of proposed rehabilitation areas (Rehab Areas) 12 and 13 in Training Area (TA) 3 (Figure 1) and Rehab Areas 14-17 in TA 6 (Figure 2) at Fort Knox, Hardin County, Kentucky. Rehab Areas 12 through 17 comprise a total of approximately 37.34 ha (92.26 acres).

Rehab Area 12, in TA 3, lies immediately east of Dorrets Run. The rehab activities in Rehab Area 12 will consist of the planting of trees to create a 50 foot vegetated buffer zone along the creek. The project area is 1.19 ha (2.94 acres) in size. The south end of this project area had been surveyed by O'Malley et al. (1980), with negative results.

Rehab Area 13, in TA 3, is a strip with a maximum width of 75 feet, paralleling the west side of Old Highway 251 from the cemetery south to the bivouac strip. The project area is 2.47 ha (6.10 acres) in size. Rehab of this area will consist of the construction of hardened crossings in low areas and the planting of a buffer zone of trees along the road.

Rehab Area 14, in TA 6, is in a low area with many tire and track ruts, which frequently contain water, creating swampy conditions. The project area is 0.78 ha (1.92 acres) in size. The rehab of this project area will consist of the smoothing of the ruts and the construction of a hardened crossing.

Rehab Area 15, in TA 6, is on the west side of 7th Armor Division Road. The project area is 1.55 ha (3.82 acres) in size. Rehab of this area will consist of the repair of the

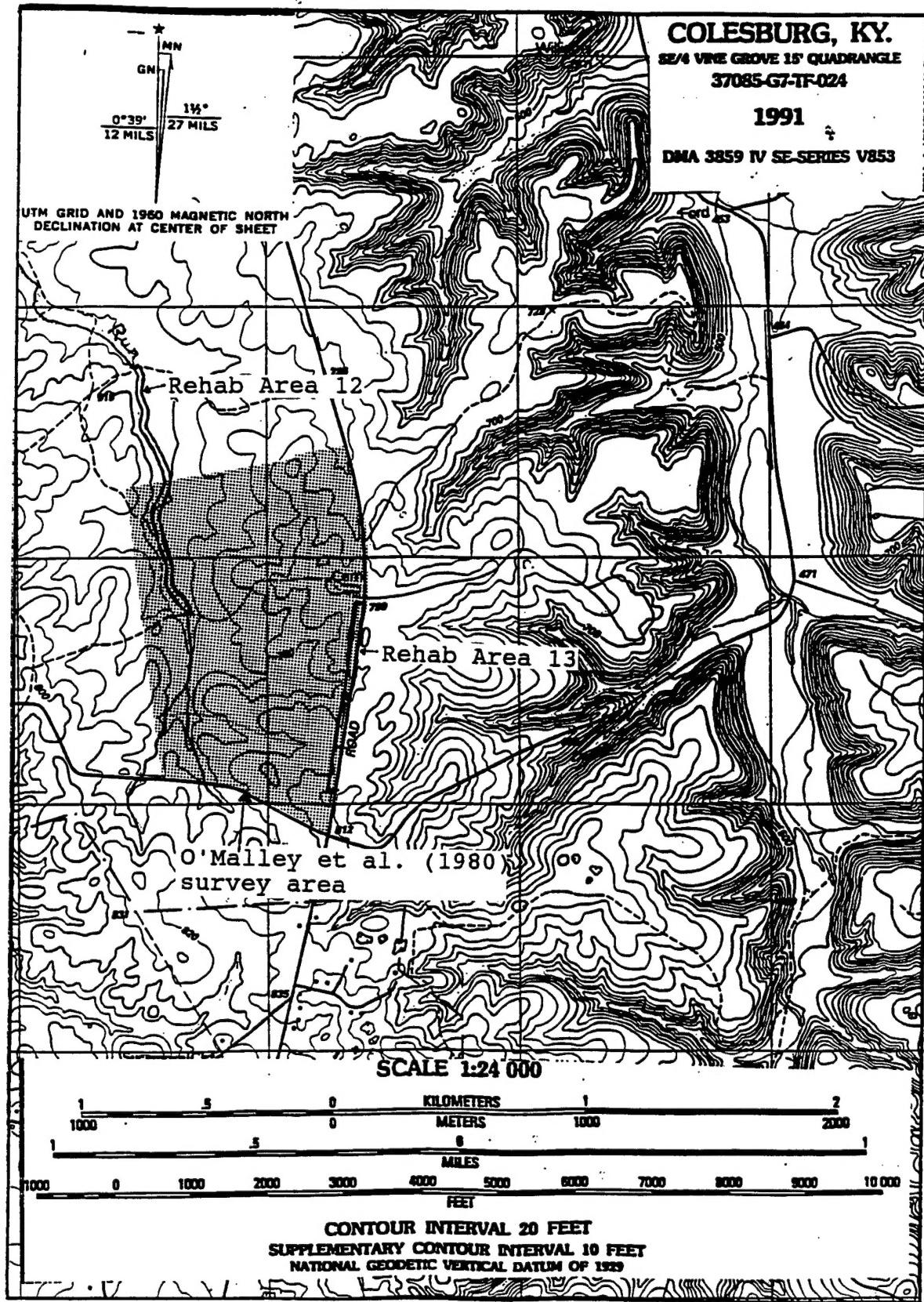


Figure 1. Location of Project Areas in Training Area 3.

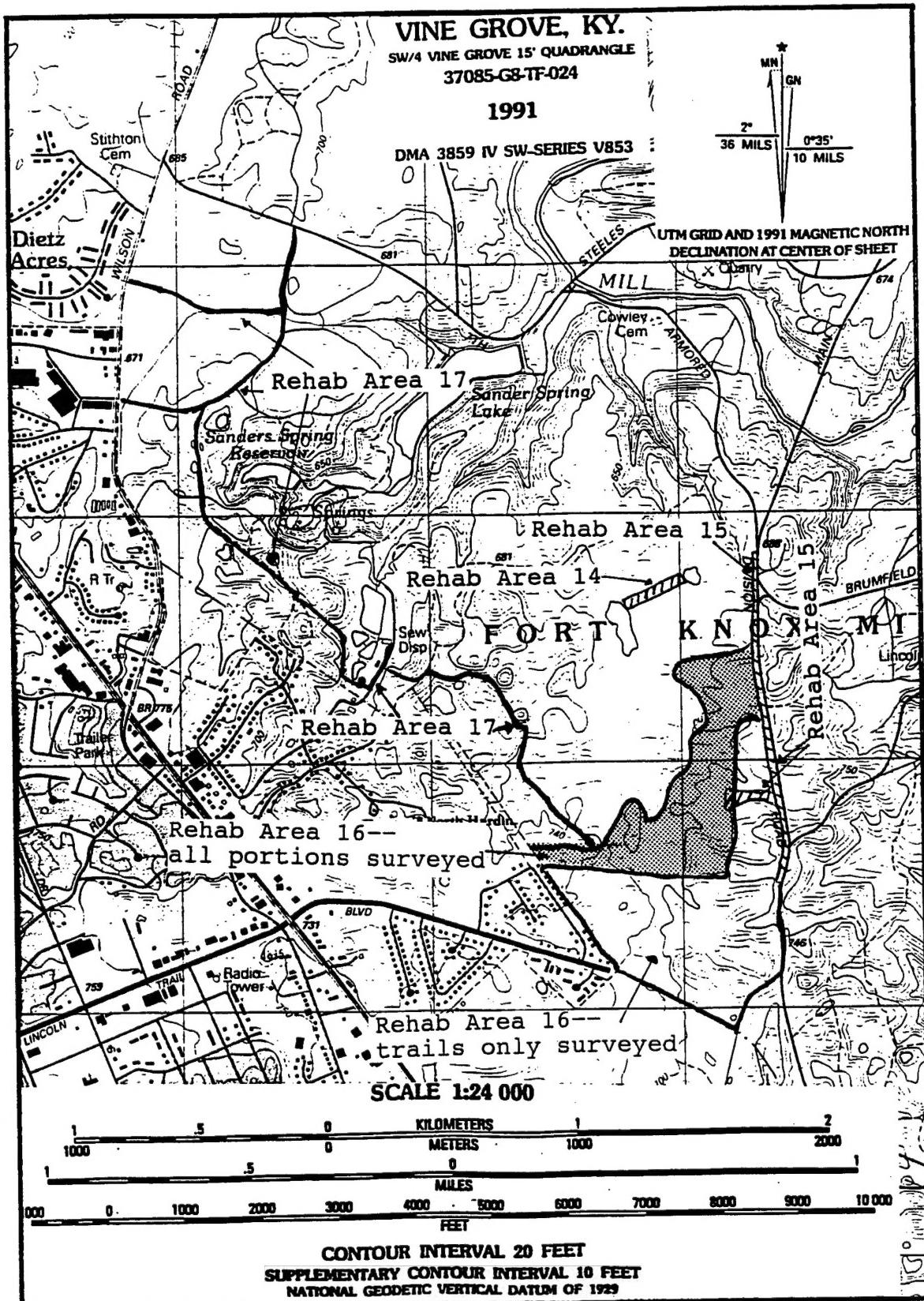


Figure 2. Location of Project Areas in Training Area 6.

tank trail by smoothing ruts and placing gravel in low spots to create hardened crossings.

Rehab Area 16, in TA 6, is a large area that has become too severely damaged to be used for tank training any longer. The project area is 29.04 ha (71.76 acres) in size. The rehab will consist of the improvement of drainage, the construction of hardened crossings at selected locations, the repair of gullies, and the revegetation of denuded area.

Rehab Area 17, in TA 6, is a series of trails paralleling the installation boundary adjoining residential areas of Radcliff. The project area is 2.31 ha (5.71 acres) in size. The rehab activities will consist of the repair and revegetation of gullied areas. Range Division also will designate "off limits" areas with signs, to create a vegetated buffer area between the tank training area and the residential area to the west.

The scheduled rehab areas are in tank training areas. The goals of land rehab are to control erosion and sedimentation, to restore natural landscape and terrain suitable for further tank training, and to create noise and dust barriers. Along eroded road cuts and tank trails, rehab will consist of grading the path to remove gullies and planting the cutbank in erosion controlling vegetation. In broader maneuver areas, the deep gullies on ridge slopes will be filled in by grading the adjoining slopes. The ridge tops and upper slopes will be plowed or disked, and the entire rehab area will be seeded in erosion controlling plants. Where possible, rehab activities avoid the removal of existing large trees. Rehab projects require contractors to avoid impact to vegetated areas in and around specified sinkholes. The rehab work for the current project is scheduled to be performed in the summer and fall of 1996.

The archaeological survey and literature review conducted in preparation for the rehab activities were required to comply with the National Environmental Policy Act, or NEPA (Public Law 91-190), the National Historic Preservation Act of 1966, as amended (Public Law 89-665), the Archaeological Resources Protection Act of 1979 (Public Law 96-95), Presidential Executive Order 11593, and Army Regulation 420-40. In 1993, Schenian obtained all the documents needed for Phase I literature searches for the installation (e.g., site forms, reports of previous investigations, historic maps). These are on file at the Cultural Resource Management office of the Environmental Management Division (EMD) of the Directorate of Public Works (DPW), Fort Knox, and are updated regularly. No file check was made with the Office of State Archaeology and the Kentucky Heritage Council specifically for this project.

The scheduled rehab areas lie in the Plain section of the Pennyville cultural landscape. Rehab Area 13, in Train-

ing Area 3, is on the divide that separates the drainages of Mill Creek and Cedar Creek, and Rehab Area 12 is in the floodplain and on rises above the floodplain of Dorrets Run. The rehab areas in TA 6 are primarily on the ridge tops and slopes of the karst plain. Elevations in TA 3 range from 685 feet to 810 feet, and in TA 6 the elevations range from 670 feet to 770 feet. Soils in TA 3 are Garmon-Frederick and in TA 6 they are classified as Crider-Vertrees soil association (U.S.D.A. 1975). The upland area and higher slopes have Vertrees and Nicholson silt loam soils, while the lower slopes have Vertrees, Otwell, and other soils. Drainage in TA 3 flows into unnamed tributaries of Mill Creek and its tributary, Dorrets Run. In TA 6, drainage is into sinkholes.

Gail Pollock provided maps and photocopies of aerial photographs that delineated the project boundaries, as well as a written description of the rehab work to be conducted in each area. The surface reconnaissance of TA 3 was performed May 17 and July 11, 1996, and the survey of TA 6 was performed on June 18, 26, and 28, 1996, and July 1, 1996, by the contract archaeological staff. A total of 36 person hours were spent in the survey of the rehab areas. Pamela Schenian, Stephen Mocas, and Michael Siefring participated in the study.

The artifacts from the survey were washed and catalogued by a student assistant at the University of Louisville Program of Archaeology. The prehistoric artifacts were analyzed by Mocas. The historic artifacts were analyzed by Schenian. The artifacts and the documentation for this project will be curated at the Program of Archaeology, University of Louisville, on a "permanent loan" basis, under contract number DABT 23-95-C-0102, for curatorial and technical support (copy of contract on file, DPW, Fort Knox, Kentucky). Duplicate copies of the documentation will be stored at DPW.

SETTING AND ENVIRONMENTAL BACKGROUND

O'Malley et al. (1980) prepared a detailed description of the setting and environmental background of the Fort Knox base as a whole. This section will concentrate on the topographic characteristics of the rehab areas inspected in the current study.

The rehab areas lie in the Mississippian Plateau physiographic region of Kentucky (McGrain and Currens 1978:35). The proposed rehab areas consist of a karst upland area, narrow, dissected ridges above Mill Creek and its tributaries, and a portion of the floodplain of Dorretts Run, a tributary of Mill Creek.

PREVIOUS RESEARCH

Approximately 26,534 acres of the Fort Knox installation have been surveyed, primarily in cultural resource management (CRM) studies. There are 112 Hunting Areas (HA) on the Fort Knox installation. Schenian and Mocas (1994a) summarize the archaeological studies conducted on or near the installation through August 1994. This section focuses on the previous research conducted within a 2 km radius of the current project areas, and discusses the sites recorded within this 2 km radius. No archaeological sites listed on the National Register are located in or immediately adjacent to the current project area, although many of the sites recorded near the current project area must be considered potentially eligible for the National Register because they have not been adequately assessed by the current standards of the profession.

In or near TA 3 O'Malley et al. (1980) surveyed portions of HAs 80 and 82-84. O'Malley et al. (1980) recorded sites 15Hd126, 15Hd128-15Hd130, and 15Hd253 in HA 80; no sites in HA 82; 15Hd147 in HA 83; and 15Hd144-15Hd146 in HA 84. DiBlasi (1986) recorded 15Hd420, just outside the installation boundary, near TA 3 in the survey of the Highway 313 corridor. Schenian and Mocas (1992) recorded no sites in proposed timber tracts surveyed in HAs 82 and 84. Schenian (1993) encountered no sites in the survey of proposed spoil areas for road construction. Schenian and Mocas (1993) recorded 15Md482-15Md484 and an isolated find of prehistoric material in a 1993 rehab area that adjoins the current Rehab Area 14 to the north. Schenian and Mocas (1996a) recorded approximately 50 sites, not of all of which have site numbers yet, plus revisited 15Hd234-15Hd240 in a range improvements area north of TA 3.

In or near TA 6 O'Malley et al. (1980) surveyed portions of HA 73 in TA 6 and portions of HA 15, 72, 74, and 76-78 outside it. O'Malley et al. recorded 15Hd214, 15Hd215, and 15Hd272 in HA 15; no sites in HA 72; 15Hd143, 15Hd161, and 15Hd260 in HA 73; 15Hd139-15Hd142, 15Hd167, 15Hd168, and 15Hd259 in HA 74; 15Hd208 and 15Hd209 in HA 76; 15Hd113 in HA 77; and 15Hd181 and 15Hd209-15Hd211 in HA 78. Ball (1991) surveyed a 19 acre tract of land, subsequently sold by Fort Knox, and recorded no sites within it. Hanson (1961a, 1961b) recorded sites 15Hd17 and 15Hd18 while at Fort Knox for ROTC training. Fiegal (1982) recorded 15Hd404 off the installation and 15Hd403 on the installation.

Schenian and Mocas (1992) reported on the survey of proposed timber harvest tracts in HA 74 and 77, reexamining 15Hd140, and unsuccessfully attempting to relocate 15Hd17, 15Hd18, and 15Hd139. Schenian and Mocas (1994a) recorded sites 15Hd485-15Hd487 in HA 73 in a rehab project, and later

tested 15Hd486 and discovered additional sites 15Hd492 and 15Hd493 (Schenian and Mocas 1996b). Schenian and Mocas (1996c) recorded 15Hd527, the Mill Creek Church, at the Lincoln Cemetery. Schenian and Mocas (1994b) recorded 15Hd495 in a survey of a proposed water line.

No sites had been recorded in the current Rehab Areas prior to the fieldwork, but 15Hd487, which was previously determined to be not eligible for the National Register, was located near Rehab Area 14 in TA 6. Site 15Hd17 was reported near Rehab Area 15, but a previous survey (Schenian and Mocas 1993) found no evidence of it in TA 6.

No standing structures listed on or eligible for listing on the National Register of Historic Places are located in the current project areas. A few houses located off the installation are visible from portions of the project areas. Examination of the maps and of the buildings suggests that these were built in the 1950s and 1960s. All of the buildings visible from the project area are brick ranch houses, with the exception of the sewer treatment plant, which contains concrete and metal buildings.

SURVEY PREDICTIONS

Based on previous archaeological research in the area, the history of settlement, and the environmental setting of the project area, the following results were expected:

- 1) The scheduled rehab areas consist of former privately owned properties which were acquired by the Army in the early 1940s. A 1940 Army map shows the locations of buildings and the 1919 land acquisition map shows the property boundaries and structure locations in the northwest corner of TA 6, although the properties were not acquired at that time. There is a high probability for historic archaeological sites at the former building sites. It is possible that additional historic sites which were already in ruins by the time of Army acquisition exist as archaeological sites.
- 2) Some former property owners opted to relocate their structures to their new properties off the installation, and the Army removed most pre-installation standing structures for liability reasons. Therefore, few intact historic structural ruins are expected.
- 3) Portions of the survey area consist of steep ridge slopes and sinkhole sides that are unlikely habitation or activity loci.

- 4) The rehab areas on the tops and upper slopes of ridges have high potential for habitation in areas where water was readily accessible.
- 5) There is a high probability of habitation sites near Mill Creek and its drainages. Sites would be expected to occur adjacent to Dorrets Run, and even though it was surveyed by O'Malley et al. (1980), it should be resurveyed.
- 6) Studies elsewhere indicate frequent occupation and activity areas around sinkholes, but the presence of abundant flowing surface water in the vicinity lessens the importance of sinkholes as habitation loci.
- 7) Historic sites frequently also have prehistoric components, suggesting that some environmental characteristics made the location desirable to both prehistoric and historic inhabitants.
- 8) The proposed rehab areas have been used for tank training for decades. Sites found in the tank training areas are likely to be wholly or partially disturbed.
- 9) Previous archaeological research in the Mill Creek drainage has demonstrated a moderate density of sites in the uplands overlooking water sources. One site is expected for each 40 acres of area surveyed.

FIELD METHODS

In general, proposed Rehab Areas 12-17 were systematically walked in transects at paced 10 m intervals. Most of the areas surveyed had been used for tank training and the ground surface is eroded well into the subsoil. Visibility in the majority of the rehab areas was very good. In most of the rehab areas ground surface visibility was 100 percent, and only very limited areas, mostly near sinkholes and on steep slopes, had surface visibility of less than 50 percent.

If the ground surface had been obscured by vegetation for greater than 10 m within a transect, then a shovel probe would have been excavated. No areas were encountered in the rehab area, however, that could not be adequately inspected via walkover at the site discovery level either through inspection of the ground surface or of exposed cut banks adjoining tank trails or gullies. The majority of the vegetated areas that will be avoided by the contractors perform-

ing the rehab work in the project areas were not systematically inspected because they are sinkholes with deep standing water.

Upon the discovery of archaeological materials, the ground surface of the area around the find was walked in transects spaced at intervals of 5 m or less, until no additional materials were recovered for a distance of at least 20 m within a transect. Figures B-1 through B-12 in Appendix B show the locations and plans of the cultural resources encountered in the proposed rehab area. The site plans show the inspection methods and salient features of these sites in greater detail.

In summary, the archaeological investigation of the proposed rehab areas resulted in the recording of eight new sites. Five isolated finds of prehistoric materials were also discovered.

ARTIFACT TYPOLOGY AND MATERIALS RECOVERED

The following paragraphs summarize the artifact typologies used in the sorting and analysis of the artifacts recovered during this project. Some historic artifacts (all from 15Hd535) are described in greater detail in this section, but prehistoric artifacts (from several sites) are described in the appropriate site description. The artifact counts are summarized in Table 1.

Prehistoric Artifact Typology

Projectile Point

A projectile point is a bifacially worked chipped stone tool that is generally assumed to have been hafted for use as a hunting implement, such as a spear head or arrowhead, but may have an alternative or additional use as a cutting or perforating implement.

Biface

A biface is a chipped stone tool that has had flakes removed from two opposite sides along one or more edges. There is considerable variety in the size, shape, and precision of chipping of bifaces, depending upon the stage of manufacture and intended use. These implements may be quarry blanks or tool blanks, preforms for projectile points or other tools, or cutting or chopping tools.

TABLE 1. Artifacts Collected from the Project Sites.

	15Hd 528	15Hd 529	15Hd 530	15Hd 531	15Hd 532	15Hd 533	15Hd 534	15Hd 535	TA3- IF1	TA6- IF1	TA6- IF2	TA6- IF3	TA6- IF4	Total
<u>PREHISTORIC ARTIFACTS</u>														
Projectile point	0	1	0	2	0	0	2	0	0	1	0	0	0	6
Scraper	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Perforator	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Uniface	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Tested Cobble/Block	0	0	0	0	0	0	0	0	0	0	1	0	0	2
Biface	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Utilized/retouched flake	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Unutilized debitage														
primary flake	0	0	0	0	0	0	1	0	0	0	0	0	0	1
secondary flake	1	2	0	5	1	1	0	0	1	0	0	1	0	12
tertiary flake	2	1	3	3	2	2	8	0	0	0	0	1	2	24
chert shatter	1	0	1	1	2	0	3	0	0	0	0	1	0	9
Prehistoric Artifact Total	4	5	4	13	5	4	16	0	1	1	1	3	3	60
<u>HISTORIC ARTIFACTS</u>														
<u>KITCHEN GROUP</u>														
Ceramics														
whiteware	0	0	0	0	0	0	0	26	0	0	0	0	0	26
stoneware														
buff	0	0	0	0	0	0	0	7	0	0	0	0	0	7
ironstone	0	0	0	0	0	0	0	3	0	0	0	0	0	3
Bottle glass														
amber	0	0	0	0	0	0	0	2	0	0	0	0	0	2
amethyst, solarized	0	0	0	0	0	0	0	4	0	0	0	0	0	4
aqua	0	0	0	0	0	0	0	8	0	0	0	0	0	8
clear	0	0	0	0	0	0	0	1	0	0	0	0	0	1
cobalt	0	0	0	0	0	0	0	1	0	0	0	0	0	1
green	0	0	0	0	0	0	0	1	0	0	0	0	0	1
lime green	0	0	0	0	0	0	0	2	0	0	0	0	0	2
milk glass	0	0	0	0	0	0	0	1	0	0	0	0	0	1
slate	0	0	0	0	0	0	0	2	0	0	0	0	0	2
yellowish	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Dish glass														
amethyst	0	0	0	0	0	0	0	6	0	0	0	0	0	6
milk glass	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Historic Artifact Total	0	0	0	0	0	0	0	66	0	0	0	0	0	66
ARTIFACT TOTAL	4	5	4	13	5	4	16	66	1	1	1	3	3	126

Scraper

A scraper is a chipped stone tool formed by the removal of a continuous series of steep flakes from a single surface of a tool. Those tools with flakes removed along one or both lateral edges are referred to as "side scrapers", and those with flakes removed from the end of the tool are labeled "end scrapers". Occasionally, one or both lateral edges and the end were used for scraping.

Uniface

A uniface is a chipped stone tool, usually made from a flake, formed by the removal of flakes from only one surface along one or more edges. Unifaces are believed to have functioned as cutting or scraping tools.

Perforator

A perforator is a chipped stone tool with a sharp, narrow tip of point suitable for use in puncturing another object, but lacking the elongated tapering shaft and typical cross-section of a drill.

Tested Cobble/Tabular Block

A tested cobble or tabular block is a piece of chert raw material that was flaked to ascertain its suitability for use in the manufacture of tools.

Chert Debitage

Chert debitage is a category used to describe the material generally created as a by-product in the manufacture of more formally defined chipped stone tools. Chert debitage may be further divided into the categories of flakes, blocky chert pieces, microflakes, and chert shatter. It also may be classified by stage of manufacture and by evidence for use as an informal, or expedient, tool. The following criteria have been applied to sort the chert debitage collected in this study:

- 1) Flakes are defined by the presence of a striking platform and bulb of percussion. Concentric rings or ripple marks on the ventral surface, and feather terminations also may be present. Flakes are classified as primary flakes if 90 percent or more of the dorsal surface (the side opposite the bulb of percussion) is covered by cortex or rind; as secondary flakes if one to 90 percent of the dorsal surface is covered by

cortex; and as tertiary flakes if no cortex is present on the dorsal surface.

- 2) A chert piece is classified as shatter if it exhibits flake-like characteristics, but is insufficiently complete to classify the piece as a primary, secondary or tertiary flake. Usually, the striking platform is missing.
- 3) A blocky chert piece is an angular chert piece lacking flake-like characteristics, and lacking evidence of having served as a core.
- 4) A microflake is a complete flake that is less than 6 mm in length and is, generally, the product of fine retouch or resharpening of tools.
- 5) A piece of chert debitage is classified as utilized if at least three contiguous small flakes have been removed from one or more edges by use rather than by retouch. Retouched flakes show localized removal of a small number of flakes to produce a specialized cutting, scraping, or perforating edge.
- 6) A piece of chert debitage is classified as unutilized if it exhibits no evidence of the removal of small flakes through use.

Historic Artifact Typology

South (1977:95-95) defined a system of artifact classification based on function. Under South's system, for example, ceramics and curved glass are kitchen group artifacts, flat glass less than 4 mm thick and nails are architectural group artifacts, and horseshoes are transportation group artifacts. All the historic artifacts collected in this project are from 15Hd535.

KITCHEN GROUP

Ceramics

Historic ceramics are divided into coarse earthenware, stoneware, ironstone, refined earthenware, semi-porcelain, and porcelain. Coarse and refined earthenware have the most porous paste, stoneware and ironstone have less porous paste, and semi-porcelain and porcelain have the least porous paste. Each of these broad categories is further divided into more specific types based on paste texture and color, glaze characteristics, and decoration (Maples 1991).

Refined Earthenware. All the refined earthenware collected in this project is whiteware (earthenware with a white paste). Unless decoration is mentioned, the sherd has white glaze on the exterior and interior surface, but no other decoration. Whiteware dates from 1830 to 1890 (Smith 1983:171). Transfer print on whiteware was most popular between 1830 and 1860 (Price 1979:31).

A total of 26 whiteware sherds were collected from 15Hd535. These include four chips, two refit body sherds, two bases, one body with cream glaze, five other body sherds, and one rim. There are also four pieces refit into a shallow bowl base-to-rim segment. The bowl has slight relief decoration at the rim and remnants of a floral (morning glory) transfer print. The whiteware sherds also include two refit rims with a scalloped rim and a relief band. There are also five sherds that come from the same dish set, but from as many as three vessels. The set has a scalloped rim with wavy relief decoration. One rim from the set has remnants of a painted band. Two other rims from the set were refit and have traces of a six-petaled flower transfer print. The remaining two sherds from the set are one rim and one body sherd that were refit.

Stoneware. Stoneware cannot be dated to a more accurate range than nineteenth to twentieth century and vessels frequently lacked makers marks. Stoneware usually is divided into gray stoneware and buff stoneware based on paste color. A dark brown paste is found with some frequency on Fort Knox historic sites, and may be the work of a local potter. Other color pastes are also found occasionally. Seven buff stoneware sherds were collected from 15Hd535. One is a bowl base, two are body sherds from different vessels, and four are body sherds from a single vessel. The four sherds from a single vessel refit into two sections of two sherds each, and all four sherds from the vessel have a charred substance with a slight petroleum odor, possibly tar, on the interior.

Ironstone. Ironstone most commonly has white paste, but brown and ivory paste variants are known. Ironstone dates from 1860 to 1920 (Ketchum 1983:201). Three ironstone sherds were recovered from 15Hd535. These are two rims and one body.

Glass

Glass kitchen artifacts are divided into three main categories. These are bottles, dishware, and canning jar lid liners.

Bottle glass. Amethyst bottle glass dates from ca. 1880 to 1914 (Newman 1970:70-75). Amber glass dates from 1860 to present, green glass from 1865 to present, clear glass from 1875 to present and cobalt and milk glass from 1890 to pre-

sent (Fike 1987:13). Yellowish glass dates from 1916 to 1930 (Baugher-Perlin 1982:261), and is the result of the solarization of clear glass containing selenium as a clarifying agent.

A total of 23 bottle glass pieces were recovered from 15Hd535. One is a cobalt bottle glass base with a Hazel-Atlas makers mark. One clear bottle mouth with "3 oz" embossed on the side was recovered, plus two pieces of slate glass from a similar bottle base without the embossing. Eight aqua pieces were also recovered, which include two pieces refit from the base of a canning jar embossed with a script "2" or "Q", one canning jar rim, two canning jar body fragments, and three other body fragments. The remaining glass pieces consist of four amethyst fragments, two lime green pieces, one green piece, one milk glass fragment, two amber fragments, and one yellowish bottle base.

Dish glass. Dish glass colors are dated the same as bottle glass colors, although dish glass often has recognizable pressed or cut patterns that permit more specific identification of manufacturing dates. One milk glass dish sherd and six amethyst pieces from a single, partially refit tumbler were recovered from 15Hd535.

CULTURAL RESOURCES

The UTM coordinates of the cultural resources inspected are listed in Table B-1 in Appendix B. The site and isolated find locations and plan views are shown in Figures B-1 through B-12.

15Hd528

Site 15Hd528 is located at an elevation of 790 feet on a rise on a ridge that divides the drainages of Cedar Creek and Mill Creek (Figures B-1 and B-3). The nearest water source is an unnamed intermittent tributary of Cedar Creek located 200 m distant. Four prehistoric artifacts (four unutilized flakes) were collected from a 30 m (north-south) by 60 m, or 1800 m², area. The materials were found in tank trails that dissected an area of scrub vegetation and small trees west of Old Highway 251. The scrub area had been used for military training and was rutted and eroded to subsoil. Visibility in the tank trails was 100 percent, but they were eroded 50 cm or more below the original ground surface. In the vegetated areas, weeds and scrub growth thoroughly covered the ground surface, reducing ground surface visibility to nearly zero percent. Cutbanks were examined and no evidence was found of potential intact deposits or intact topsoil. The vegetated areas were narrow enough that it is

unlikely that intact deposits could exist that would not have been detected in the cutbank soil profiles.

Site 15Hd528 is not eligible for the National Register due to previous disturbance and lack of evidence for potential intact cultural deposits. No additional archaeological research is recommended at 15Hd528.

15Hd529

Site 15Hd529 is located at an elevation of 800 feet on a rise on a ridge that divides the drainages of Cedar Creek and Mill Creek (Figures B-1 and B-4). The nearest water source is an unnamed intermittent tributary of Dorrets Run of Mill Creek located 240 m away. A proximal fragment of a Turkey-tail projectile point (Figure 3a), a medial fragment of a biface broken early in manufacture, and three unutilized flakes were collected from a 20 m (north-south) by 20 m, or 400 m², area. The materials were found in tank trails that dissected an area of scrub vegetation and small trees west of old Highway 251. The area had been used by military training vehicles and was eroded to subsoil. Tire ruts over 1 m deep traversed the site. Visibility in the tank trails was 100 percent. The vegetated areas had only 10 percent visibility, but were so narrow that they could not contain a significant amount of cultural material. The cutbanks were examined, but no evidence of potential intact deposits was found.

Site 15Hd529 is not eligible for the National Register due to previous disturbance. No further archaeological is recommended for 15Hd529.

15Hd530

Site 15Hd530 lies at an elevation of 700 feet on a very slight rise 25 m east of Dorrets Run (Figure B-1 and B-5). A lateral fragment of a biface and four chert flakes were collected from a 50 m (north-south) by 5 m, or 250 m², area. The materials were found in a tank trail that dissected an area of grass, scrub vegetation, and small trees. The area had been used by military training vehicles and was eroded to subsoil. Visibility in the tank trail was 100 percent, but the vegetated areas had less than 10 percent visibility. Despite the poor visibility in the vegetated areas, it was apparent that these areas were eroded well into subsoil. No evidence of potential intact deposits was found.

Site 15Hd530 is not eligible for the National Register due to previous disturbance. No additional archaeological work is recommended for 15Hd530.

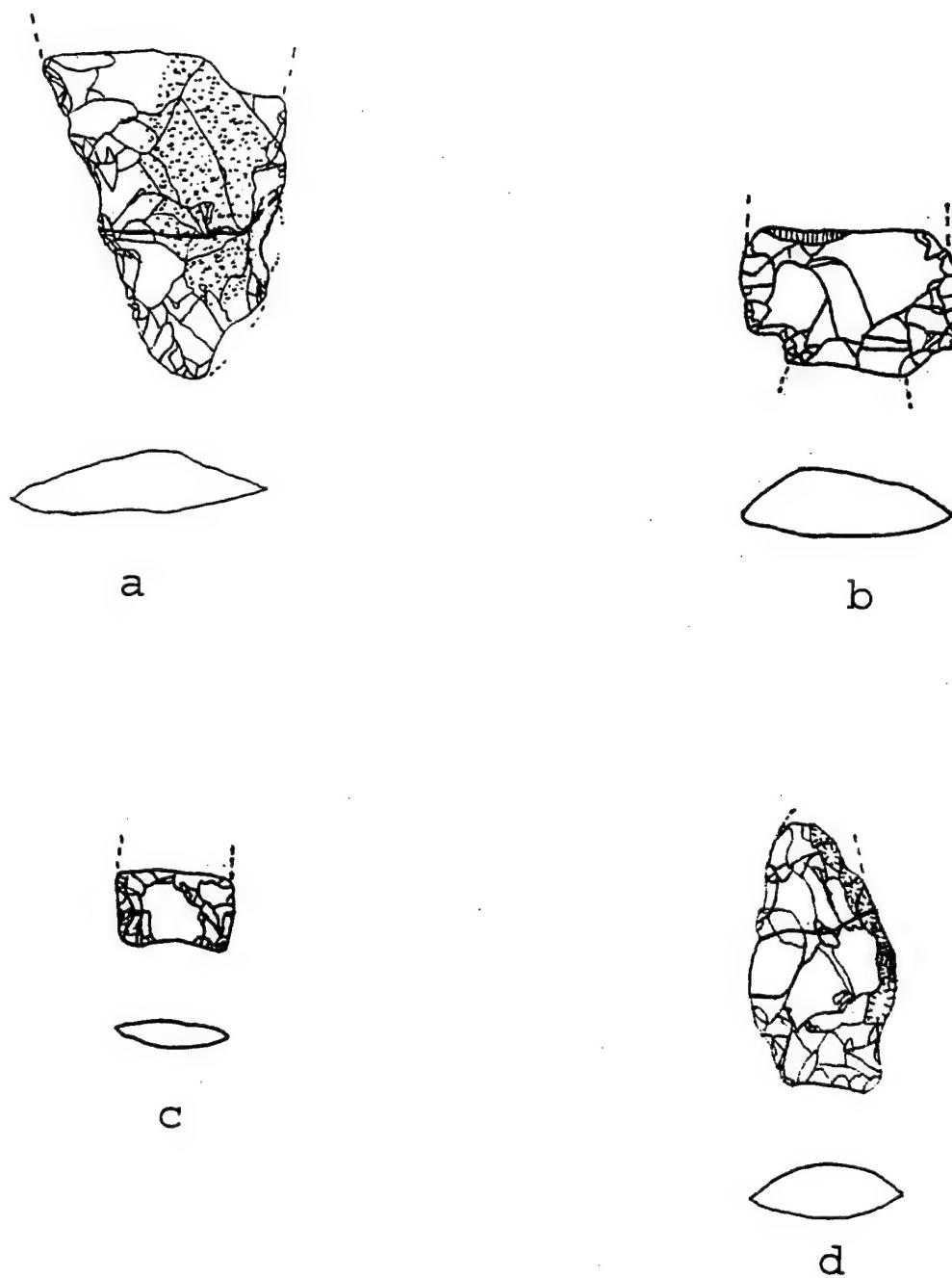


Figure 3. Selected Artifacts from 15Hd529, 15Hd534, and TA6-Isolated Find #1.

15Hd531

Site 15Hd531 is located at an elevation of 710 feet on a slight rise 20 m east of Dorrets Run and 75 m south of a small tributary (Figures B-1 and B-6). A basal fragment of a probable Adena Stemmed projectile point (Figure 4b) and a proximal fragment of an unidentified expanding-stemmed Late Archaic projectile point (Figure 4a), a fragment of an end scraper (Figure 4d), a unifacial cutting tool (Figure 4c) and several chert flakes were collected from a 80 m (north-south) by 50 m, or 4000 m², area. The materials were found in two tank trails that dissected an area of grass, scrub vegetation, and small trees. Much of the area had been used for military training and portions were eroded to subsoil. Visibility in the tank trails was 100 percent, but the vegetated areas had less than 10 percent visibility. Despite the poor visibility, it was observed that most of the site area had intact topsoil with the exception of the eroded trail. The recovery of only a small amount of cultural material may be partially due to poor visibility. The presence of large pieces of Muldraugh chert, which was not available in the immediate vicinity, suggests that a least one of the occupations involved individuals returning to the site with raw material gathered several kilometers away. The variety of tools further suggests that this site may have been a short-term habitation site or specialized activity site.

Site 15Hd531 is potentially eligible for the National Register despite previous disturbance to a portion of the site. Some of the site vicinity had been eroded to subsoil, but examination of the cutbank along the tank trail suggests that up to 20 cm of topsoil exists across portions of the site. The presence of intact topsoil suggests that intact cultural deposits may exist on the site. The grading of the trail closest to Dorrets Run will not affect the intact portions of the site, because that trail is eroded well into subsoil and no evidence of cultural features was observed in the trail. It is not necessary, therefore, for the grading to be monitored. The tree planting on the site, however, is likely to uncover artifacts and possibly encounter cultural features. It is recommended that the archaeologists monitor the tree planting activities in the site vicinity. The archaeologists should examine the soil profiles of the tree root holes and screen the fill prior to backfilling of the holes. The planting of trees on the site will help prevent further vehicular damage to the site. Additional archaeological research may be required at 15Hd531 if future undertakings might impact the site.

15Hd532

Site 15Hd532 lies at an elevation of 715 feet on a slight rise 20 m east of Dorrets Run between two tank crossings (Figures B-1 and B-6). Several chert flakes were col-

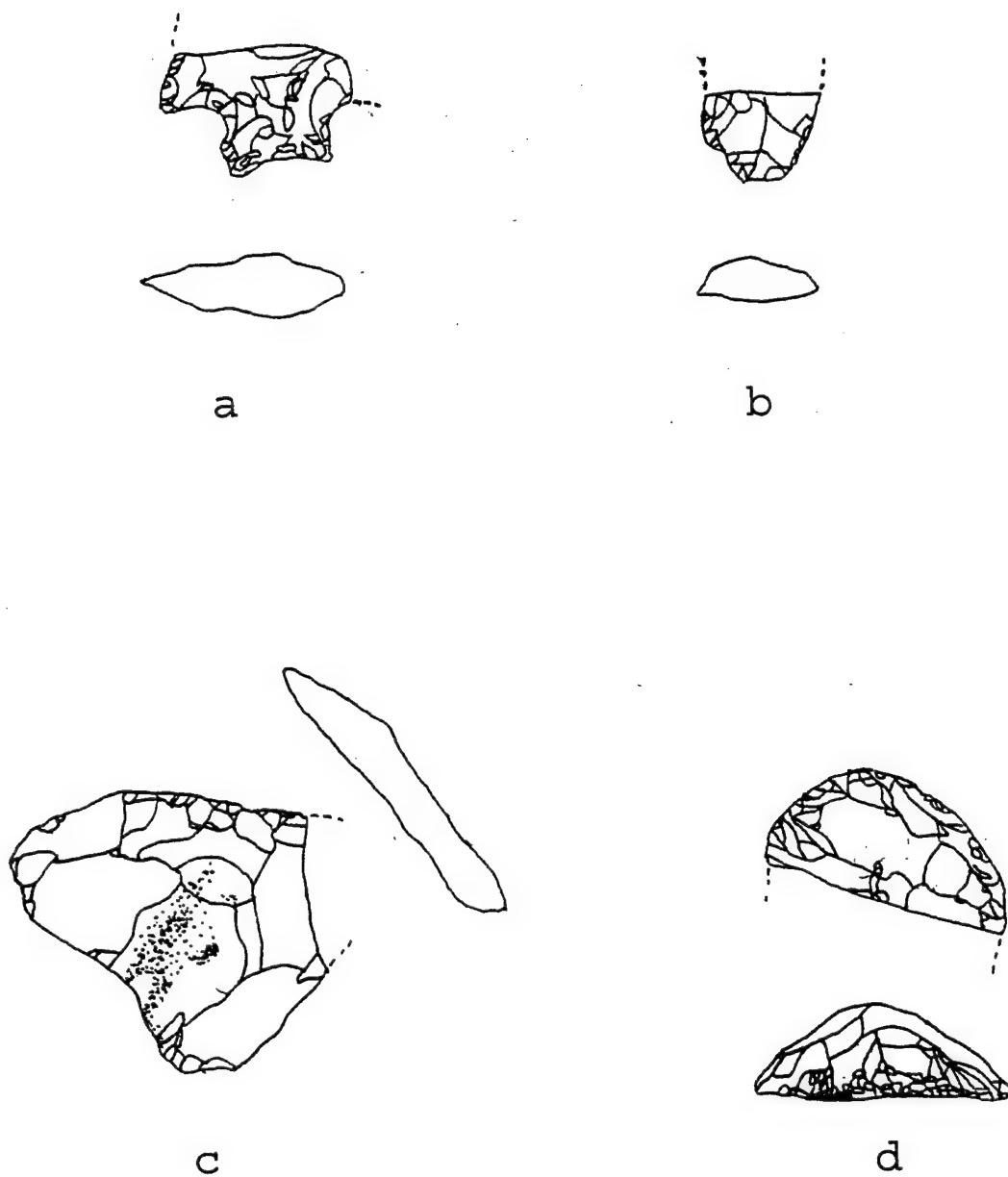


Figure 4. Selected Artifacts from 15Hd531.

lected from a 20 m (north-south) by 75 m, or 1500 m², area. The materials were found in two tank trails that dissected an area of grass, scrub vegetation, and small trees. Much of the area had been used for military training vehicles and was eroded to subsoil. Visibility in the tank trail was 100 percent, but the vegetated areas had zero percent visibility. The vegetated areas between the trails did not appear to have intact subsoil.

Site 15Hd532 is not eligible for the National Register because of previous disturbance. No further archaeological research is recommended for 15Hd532.

15Hd533

Site 15Hd533 is located at an elevation of 710 feet on a very slight rise 20 m east of Dorrets Run at a major tank crossing (Figures B-1 and B-7). Several chert flakes were collected from a 40 m (northeast-southwest) by 15 m, or 600 m², area. The materials were found in tank trails that dissected an area of grass, scrub vegetation, and small trees. Much of the area had been used for military vehicle training and was eroded to subsoil. Visibility in the tank trail was 100 percent, but the vegetated areas had less than 10 percent visibility. The area between the trails did not appear to have intact subsoil and no evidence was observed of potentially intact cultural deposits. In some places the ground was eroded to 1.5 m or more below the original surface.

Site 15Hd533 is not eligible for the National Register because of previous disturbance. No evidence of potential intact deposits was observed either on the ground surface or in erosional cutbanks. No additional archaeological investigation is recommended for 15Hd533.

15Hd534

Site 15Hd534 is located at an elevation of 700 feet on a very slight rise 20 m east of Dorrets Run and directly south of its confluence with a tributary (Figures B-1 and B-8). A medial fragment of an unidentified Late Archaic projectile point (Figure 3b) and a proximal fragment of a small, extremely thin (possibly triangular) Late Woodland or Mississippian projectile point (Figure 3c) were recovered from tank trails. Several utilized and retouched chert flakes and small biface reduction flakes were collected from a 30 m by 30 m, or 900 m², area. The tank trails had 100 percent visibility, but the area of grass, scrub vegetation, and small trees had nearly zero percent ground surface visibility. Much of the area had been used by military training vehicles and was eroded to subsoil. Although ground surface visibility was poor in the vegetated areas, all open patches

showed subsoil at the ground surface. The tools and debitage suggest that at least two components are present, and one or both may be special activity sites.

Site 15Hd534 is not eligible for the National Register because of previous disturbance. All of the site vicinity was eroded to subsoil, and it appears that there has been some shifting of the stream at the juncture of the tributary with Dorrets Run, causing roiling of the cultural material in a portion of the site. No additional archaeological research is recommended for 15Hd534.

TA3 Isolated Find #1

TA 3 Isolated Find #1 consists of a secondary flake and a small number of flakes that could not be confidently identified as culturally-produced (Figures B-1 and B-3). These were found on a low rise about 70 m south of 15Hd528. There was scrub vegetation covering the ground surface that limited visibility to about 40 percent. Visibility was 100 percent in the tank trails. No other cultural materials were found. Isolated finds are not eligible for the National Register, and no additional archaeological research is recommended for this find spot.

15Hd535

Site 15Hd535 lies at an elevation of 710 feet on the west slope of a ridge between the western drainage of Mill Creek and the beginning of the sinkhole plain (Figures B-2 and B-9). The nearest water source may be a large sinkhole to the west or an intermittent tributary of Mill Creek. Materials were found in tank trails and on the eroded surface of an area of scrub vegetation and small trees west of 7th Armored Division Road. A concentration of artifacts was found at the north end of the site with other materials scattered lightly over the rest of the site. The area had been used for tank training and was eroded to subsoil. Visibility in the tank trails was 100 percent, but they were eroded below the original ground surface. The remainder of the area was thoroughly covered with scrub vegetation and small trees leaving only 10 percent visibility.

Site 15Hd535 was on the property of Charles Zwicker at the time of Army acquisition in the 1940s, and an Army map shows a house at the lower end of the site (near where the artifact concentration was found) in 1940. No structural remains were observed on the site during the current survey, however.

Site 15Hd535 is not eligible for the National Register due to previous disturbance. Much of the site vicinity was eroded to several feet below the original ground surface.

The adjoining area was heavily rutted and eroded by tank training. The vegetated areas have deep ruts and standing water in them, and are sufficiently narrow that there is no potential for intact deposits. No additional archaeological research is recommended for 15Hd535.

TA6 Isolated Find #1

An unidentified Middle-Late Archaic projectile point (Figure 3d), possibly a Matanzas Side Notched or Merom Expanding Stemmed, was found as an isolate on a rise on the ridge that separates the drainages of Cedar Creek and Mill Creek (Figures B-2 and B-10). The point was found 7 m west of 7th Armored Division Road at its intersection with Lincoln Cemetery Road. The find location had been partially scraped at some time for the construction of 7th Armored Division Road. The area was dissected by tank trails and eroded to subsoil. No other cultural materials were found in the open, eroded area to the west of the find spot. The surrounding area was in woods, with poor ground surface visibility. Scraping away leaves and evergreen needles showed that subsoil was located immediately below the humic zone.

Isolated finds are not eligible for the National Register. No additional archaeological investigation is recommended for the TA 6 Isolated Find #1 location.

TA6 Isolated Find #2

A tested tabular block of fossiliferous chert was found as an isolate on the end of a narrow ridge spur surrounded by sinkholes (Figures B-2 and B-11). The tank trails and the open area created by intersecting tank trails and the trails had 100 percent visibility, but were eroded to subsoil. The surrounding area was forested and offered no ground surface visibility. No other cultural materials were observed in the vicinity.

Isolated finds are not eligible for the National Register. No additional archaeological investigation is recommended for the TA 6 Isolated Find #2 location.

TA6 Isolated Find #3

Three unutilized flakes were collected from a 60 m (northwest-southeast) by 50 m, or 3000 m², area (Figures B-2 and B-9). The materials were found in tank trails and on the eroded surface of an area of scrub vegetation and small trees west of 7th Armored Division Road. The area had been used for tank training and was eroded to subsoil. A site form for this location was submitted to the Office of State

Archaeology (OSA) as project site TA6-2. OSA declined to give the location an official state site number, however, citing the small assemblage size and the disturbed condition of the find location.

The find location is located at an elevation of 710 feet on a toeslope of a ridge between the western drainage of Mill Creek and the beginning of the sinkhole plain. The nearest water source may be a large sinkhole to the west or an intermittent tributary of Mill Creek. Visibility in the tank trails was 100 percent, but they were eroded below the original ground surface. The vegetated areas had 10 percent visibility, but deep ruts and pools of standing water were present in them. Long cutbanks were examined, and no evidence was observed of potential intact deposits.

Isolated finds are not eligible for the National Register. No additional archaeological investigation is recommended for TA6 Isolated Find #3.

TA6 Isolated Find #4

A tested nodule of chert and two tertiary flakes were collected from a 85 m (north-south) by 35 m, or 2975 m², area (Figures B-2 and B-12). The materials were found in tank trails and on the eroded surface of a level area surrounded by scrub vegetation and small trees. The area had been used for training and was eroded to subsoil. A site form for this location was submitted to the Office of State Archaeology (OSA) as project site TA6-3. OSA declined to give the location an official state site number, however, citing the small assemblage size and the disturbed condition of the find location.

The find spot is located at an elevation of 710 feet on a level area on a slope of a ridge that divides the drainage of Mill Creek and the beginning of the sinkhole plain. The nearest water source may be a large sinkhole to the west or an intermittent tributary of Mill Creek. Visibility in the portions of the level area not under standing water and in the tank trails was 100 percent, but much of the south end of the site was covered by water. The cutbanks of tank trails and the ravine margins were examined and there was no evidence of potential intact deposits.

Isolated finds are not eligible for the National Register. No additional archaeological work is recommended for this find spot.

CONCLUSIONS AND RECOMMENDATIONS

The Phase I archaeological investigation of 1996 rehab tracts 12 through 17 in Training Areas 3 and 6 resulted in the recording of sites 15Hd528 through 15Hd535 and five isolated finds of prehistoric material.

Sites 15Hd528, 15Hd530, 15Hd532, 15Hd533, and isolated finds (IFs) TA3-IF1, and TA6-IF2 through TA6-IF4 have indeterminate prehistoric components. These four sites and the isolated finds are not eligible for the National Register due to their disturbed condition, lack of evidence for potentially intact cultural deposits, and small artifact assemblages.

Site 15Hd529 has a Late Archaic-Early Woodland components and 15Hd534 has Late Archaic and Late Woodland-Mississippian components. TA6-IF1 is an unidentified Middle-Late Archaic projectile point. Sites 15Hd529, 15Hd534, and TA6-IF1 are not eligible for the National Register.

Site 15Hd535 is a late nineteenth-early twentieth century historic site, believed to be the Charles Zwicker farmstead. It is not eligible for the National Register due to its disturbed condition and lack of evidence for intact cultural deposits.

Site 15Hd531 has a Late Archaic-Early Woodland components. Site 15Hd531 is potentially eligible for the National Register due to the presence of intact topsoil over much of the site and conditions not conducive to a complete evaluation of the site.

No further archaeological investigation is recommended for 15Hd528-15Hd530, 15Hd532-15Hd535, or the five isolated find locations. Additional archaeological research is recommended for 15Hd531. The tank trail passing through 15Hd531 is eroded well into subsoil, so the proposed grading of the trail will not affect intact areas of the site. It is recommended that archaeologists monitor the tree planting in the 15Hd531 vicinity, examining soil profiles and screening the soil prior to backfilling of the tree root holes. Further work may be required at 15Hd531 if future undertakings will impact the site.

The survey of Rehab Area 15 in the dense woods adjacent to Old Highway 251 in Training Area 6 and of Rehab Area 17 along the west installation boundary in Training Area 6 consisted of the survey of the trails only, which will be the only areas subjected to earthmoving in the proposed soil rehab project. Additional archaeological survey will be

required for future undertakings which extend into the woods in the vicinity of these two project areas.

The current survey recorded five archaeological sites (15Hd528, 15Hd529, 15Hd531-15Hd533) and one isolated find (TA3-IF1) in portions of Hunting Area 82, Training Area 3, that had been previously surveyed by O'Malley et al. (1980) with negative results. This illustrates the need to reexamine at least all of the areas previously surveyed with negative results in early studies that are physiographic forms with moderate to high potential for archaeological sites.

If archaeological materials are discovered during the rehab activities, all work in the vicinity of the finds must cease and the SHPO (502-564-7005) and the DPW staff archaeologist (502-624-6581) should be contacted, so a representative of those agencies may evaluate the materials. Also, if human remains, regardless of age or cultural affiliation, are discovered, all work in the vicinity of the remains must cease immediately, and the state medical examiner (502-564-4545) and the appropriate local law enforcement agency (Fort Knox Law Enforcement Command, 502-624-6852) must be contacted, as stipulated in KRS 72.020.

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APPENDIX A.
RESUMES OF KEY PERSONNEL

Pamela A. Schenian
Staff Archaeologist and Project Principal Investigator

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Schenian)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Date and Place of Birth: January 1, 1959; Waukesha, WI.

Present Position: J.M. Waller & Associates/Fort Knox Contract Staff Archaeologist

Education:

A.B.D. in Anthropology, Northwestern University, 1984.
M.A. in Anthropology, Northwestern University, 1982.
A.B. in Anthropology, Bryn Mawr College, 1980.

Previous Employment:

Senior Staff Archeologist, Archeology Service Center, Department of Sociology, Anthropology, and Social Work, Murray State University, Murray, KY, November 1991-June 1993;
Staff Archeologist, November 1983-November 1991.

Southern Illinois University, Carbondale, IL: Field Technician, November-December 1985, September-October 1984.

Illinois State Museum Society, Springfield, IL: Field Assistant II (Supervisor), summer 1983; Field Technician, summer 1981.

Center for American Archeology, Kampsville, IL: Field Technician, summer 1982.

Department of Anthropology, Northwestern University, Evanston, IL: Teaching Assistant, 1981-82 academic year.

Great Lakes Archeological Research Center, Milwaukee, WI: Field Technician, summer 1979.

Field Research Experience:

Field experience on prehistoric and historic archaeological projects in Illinois, Indiana, Kentucky, New Jersey, South Dakota, Tennessee, and Wisconsin, 1979-present.

Professional Publications, Reports, Papers and Manuscripts:
109 CRM contract reports on projects in Indiana, Kentucky, and Tennessee.

1 Homicide site excavation contract report prepared in lieu of court testimony in Illinois.

7 Papers presented at professional conferences.

6 Publications.

Doctoral candidacy qualifying paper: "A Theory of Individual Style Variation for Archeological Studies".

Ms. submitted in partial fulfillment of the M.A. requirements: "Models of Environmental-Cultural Relationships: Testing with Archeological Evidence".

Stephen T. Mocas
Contract Assistant Staff Archaeologist

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Mocas)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Present Position: University of Louisville Program of
Archaeology/Fort Knox Contract Assistant Staff Archeologist

Education:

Completed one year of doctoral program, Southern Illinois University, Carbondale, Illinois, 1972.
B.A. in Anthropology, University of Louisville, 1971.

Previous Employment:

Indiana University, Bloomington, Indiana: Staff Archaeologist, Part-time September 1991-Present.

Fort Knox/University of Louisville: Contract Assistant Staff Archaeologist, November 1993-December 1994.

Murray State University, Murray Kentucky: Staff Archaeologist, November 1991-November 1993.

Jefferson Community College, Louisville, Kentucky.
Anthropology Instructor, August 1981-December 1982.

Louisville School of Art, Louisville, Kentucky: Anthropology Instructor, January-May 1976.

University of Louisville Archaeological Survey, Louisville, Kentucky. Project Director, Field Supervisor, or Research Assistant on various projects, July 1969-January 1977.

State University of New York of Buffalo, Buffalo, New York. Senior Field Worker, June-August 1970.

Field Research Experience:

Field experience, Phase I-III, prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New York, and Tennessee, 1969-present.

Research Grants:

Six grants for fieldwork and research.

Professional Publications, Reports, Papers and Manuscripts:

2 Non-contract site reports on projects.

35 CRM contract reports on projects.

6 Chapters in additional site reports.

5 Publications.

APPENDIX B.
LOCATION OF CULTURAL RESOURCES
AND SITE PLANS